2453

PATRICK J. SMITH
ENVIRONMENTAL ENGINEER
(304) 234-2669

Wheeling Pittsburgh
STEEL CORPORATION

January 5, 2001

Ms. Lynne Caughell
Ohio Department of Commerce
Division of State Fire Marshall
Bureau of Underground Storage Tank Regulations
8895 East Main Street
Reynoldsburg, OH 43068-0678

Re: **Wheeling-Pittsburgh Steel Corporation**
Martins Ferry Plant
Underground Storage Tank Release
Additional Information Requested for Remedial Action Plan

Dear Ms. Caughell:

On November 6, 2000, we received your request for additional information regarding the April 2000 Remedial Action Plan we submitted to your office. Shortly after receiving your letter, Wheeling-Pittsburgh Steel Corporation (WPSC) filed for Chapter 11 bankruptcy protection due to financial distress. As a result of filing, IT Corporation, the hydrogeological consultant secured to assist us in development of the RAP, made a business decision to discontinue operations with WPSC. Due to these circumstances, our response has been delayed.

As we recently discussed, WPSC is currently reviewing the credentials of several qualified hydrogeological consultants to gain the expertise needed to provide a thoughtful response to your comments. In order to allow adequate time for selection of a consultant, review of the historical data, and development/revision of the RAP, we request additional time. We plan to provide a response to you by February 28, 2001.

We appreciate your understanding in this matter. If you have any questions regarding this, please contact me at (304) 234-2669.

Sincerely,

Patrick J. Smith

PJS

Steel the recycled material

cc: Ms. Carol A. DeVore
Director
Petroleum Underground Storage Tank Release Compensation Board
P. O. Box 163188
Columbus, Ohio 43216-3188

BES/ECMF 2.4.5.3
Todd Koget

ECMF\MF\UST\RAP1.DOC

PJS / BGS / ECMF 2.4.5.1.1.

Ohio Department of Commerce

Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations
6606 Tussing Road • P.O. Box 687
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Bob Taft
Governor

Gary C. Suhadolnik
Director

November 3, 2000

PATRICK J SMITH
WHEELING PITTSBURGH STEEL CORP.
1134 MARKET ST
WHEELING WV 26003

SITE: WHEELING PITTSBURGH
STEEL CORPORATION.
1001 MAIN ST
MARTINS FERRY OH
BELMONT COUNTY
INCIDENT #0702394-01
RELEASE #07000179-N00001

RE: ADDITIONAL INFORMATION REQUESTEDFOR REMEDIAL ACTION PLAN (RAP)

Dear Mr. Smith:

The Bureau of Underground Storage Tank Regulations (BUSTR) reviewed your report titled "Addendum to the Revised Remediation System Design and Corrective Action Plan" dated April 2000. Based on our review of this report, BUSTR requests that information on the following point(s) be supplied so we can determine the status of your site.

1. The proposed RAP does not address soil contamination nor does it address the shallow groundwater contamination. These issues must be addressed before the RAP can be formally approved.

2. The proposed RAP outlines a sequence of events that is not in accordance with the established protocol established protocol established in the Ohio Administrative Code 1301: 7-9-13(I), (J), (K), (L), and (M). All assessment investigative work is to be completed *before* a remedial action plan can be implemented.

3. Please clarify which monitoring wells will be monitored as part of the quarterly monitoring schedule.

An order form and other publications that may help you to understand the requirements for compliance with BUSTR's rules and regulations may be found on the Internet at www.com.state.oh.us/sfm *or* by calling our office. Please submit this information to BUSTR within 60 days from the date of this letter. Thank you for your cooperation. If you have any questions, please contact me at 614-752-7938.

Sincerely,

Lynne Caughell

Lynne Caughell
Environmental Specialist

RECEIVED BY
ENVIRONMENTAL CONTROL DEPARTMENT
NOV - 6 2000

Enclosures

xc: Site File

2.4.5.1.1

Wheeling Pittsburgh
STEEL CORPORATION

PATRICK J. SMITH
Environmental Engineer
ENVIRONMENTAL CONTROL
(304) 234-2669

July 25, 2000

Ms. Lynne Caughell
Ohio Department of Commerce
Division of State Fire Marshall
Bureau of Underground Storage Tank Regulations
8895 East Main Street
Reynoldsburg, OH 43068-0678

Re: **Wheeling-Pittsburgh Steel Corporation**
Martins Ferry Plant
Remediation of Underground Storage Tank Release
Addendum to RRSD

Dear Ms. Caughell:

Please find enclosed the report, "Addendum to the Revised Remediation System Design and Corrective Action Plan", prepared by our consultant, IT Corporation (IT).

As you are aware, we recently submitted the year 2000 first quarter's report for the Martins Ferry Plant Monitor Well Gauging and Bailing Program. Concurrently with preparation of that document, we completed a natural attenuation review to evaluate progress achieved to date in conjunction with the environmental cleanup goals established for the historical UST release.

After completing our review, we concluded that on-going natural attenuation-based remediation of the gasoline related organic (GRO) constituents in the deeper aquifer may be enhanced through augmentation with an enhanced remediation approach. We subsequently requested IT to conduct a review of an enhancement to the original RRSD (prepared by Fluor-Daniel GTI - 1995). IT's review concluded that the technology presented within the RRSD was still applicable to meet cleanup goals. We then asked IT to prepare the enclosed RRSD Addendum.

Based on our desire to meet the environmental goals associated with the former UST release, we now propose commencement of a pilot study scale installation of a Soil Vapor Extraction (SVE)/Air Sparge remediation system within the area where GRO constituents have the highest residual concentrations.

Pending your review and approval of the enclosed RRSD Plan Addendum, we will commence installation. After startup of the SVE/Air Sparge system, we will commence a monitoring program as presented in the Addendum.

The monitoring wells outside the pilot study scale system will continue to be monitored on a monthly schedule and the results compiled in our typical quarterly report. If you have any questions or comments please contact me at (304) 234-2669, or Mr. Harry Dravecky of IT at (412) 858-3324.

Sincerely,

Patrick J. Smith

Enclosure
cc: ECMF 2.4.5.1
Todd Koget (w/ att.)
Harry Dravecky - IT Corp. (w/o att.)

ADDENDUM TO THE
REVISED REMEDIATION SYSTEM DESIGN AND
CORRECTIVE ACTION PLAN

SVE/AIR SPARGE SYSTEM
MARTINS FERRY, OHIO

Prepared for:

Wheeling Pittsburgh Steel Corporation
Wheeling, West Virginia

Prepared by:

IT Corporation
Monroeville, Pennsylvania

Project No. 807162
April 2000

Table of Contents

List of Figures

1.0 INTRODUCTION

IT Corporation (IT) has been contracted by Wheeling-Pittsburgh Steel Corporation (WPSC) to prepare this Addendum to the Revised Remediation System Design and Corrective Action Plan (RRSD) which had been submitted to the Bureau of Underground Storage Tank Regulations (BUSTR) in April 1995. The purpose of this report is to update site conditions and detail the revised remediation system design.

The remediation system design is being revised to indicate a phased approach to the installation of the soil vapor extraction (SVE)/air sparging system. The first phase, detailed in this report, will focus remedial efforts on the deep aquifer in the area of the wells showing the greatest hydrocarbon impact, MW-6, MW-9, MW-10, and RW-1. After installation and operation of the Phase I system, its effectiveness and the hydrocarbon impact remaining at the site will be evaluated to determine the appropriate future activities.

1.1 Site Location and Background

WPSC's Martins Ferry Plant #1 is located in the borough of Martins Ferry, Belmont County, Ohio. The Ohio River is located approximately 200 feet east-southeast of the eastern edge of the facility. The soil and groundwater at the site have been impacted by a past release of gasoline from an underground storage tank (UST). The UST has since been removed from the site. The following activities have been completed at the site:

- Site Assessment (November 1990)
- Phase II Site Assessment (May 1991)
- Interim Remedial Measures (Initiated in June 1991)
- Remediation System Pilot Testing (October/November 1992)
- Additional Investigation (September 1993)
- Gauging and quarterly sampling of site monitoring wells (on-going).

More information on the site assessments and pilot testing can be found in the RRSD.

This site has been classified as a Category 3 site based on the State Fire Marshall Site Feature Scoring System.

1.2 Site Geology/Hydrogeology

According to the site assessments listed above, the soils at the site consist of fill material underlain by a generally downward coarsening sequence of fluvial deposits. A perched water bearing zone was identified in the area of the former UST. The areal extent of the perched zone is unknown, but appears to be present in the southern portion of the investigation area (MW-1 through MW-5, MW-7, MW-8, and MW-17) and appears to diminish between MW-1 and MW-6. Well locations are shown in Figure 1. The native soils within the perched zone consists of clays and sandy clays. Beneath the perched water bearing zone, a deeper aquifer, consisting of sands and gravels, was identified.

Depths to water in the perched water bearing zone range from approximately 19 to 26 feet below ground surface (bgs). Depths to water in the deeper water bearing zone range from approximately 28 to 43 feet bgs. Groundwater flow in both aquifers is generally north and north-northwest (Figures 2 and 3).

1.3 Distribution of Hydrocarbon Impact in Groundwater

Historically, liquid-phase hydrocarbons (LPH) had been detected floating on the water table periodically in six wells: MW-1, MW-4, MW-6, MW-9, MW-10, and RW-1. LPH was not detected in any wells during the most recent groundwater gauging event.

Groundwater analytical data from the most recent sampling event (12/10/99) are presented in Figure 4. As shown, the greatest groundwater impact remaining in the deeper aquifer is observed in MW-6 and MW-10, with lower levels observed in RW-1 and MW-9. Impact in the shallow aquifer remains in MW-1 and MW-2.

2.0 DESIGN BASIS

The basis for system design was obtained from the recent groundwater analytical data summarized above and the data obtained from site pilot testing that is detailed in the RRSD. The data utilized from the pilot test and parameters determined as part of this phase of the remediation system are summarized below:

Parameter	Soil Vapor Extraction System	Air Sparging System
Screened interval (a)	32 to 37 feet bgs	48 to 50 feet bgs
Well head pressure/vacuum (a)	18 inches of water	15 pounds per square inch
Estimated radius of influence(a)	52 feet	40 feet plus
Flow per well (a)	67 scfm (b)	15 scfm
Number of wells (c)	5	7
Maximum flow (c)	335 scfm	45 scfm (d)

(a) Determined from pilot test activities.
(b) scfm - standard cubic feet per minute.
(c) Determined based on target remediation area for this phase of activities.
(d) A maximum of three wells will be operating at any one time.

The locations of the SVE and air sparging wells (Figure 5) were based on the following:

- The target remediation area for this phase of activities; i.e., the deep aquifer bounded by MW-6, MW-9, and MW-10.
- The radii of influence given above.
- Limitation on drilling locations based on surface and overhead obstructions to drilling (especially inside the site buildings).

The pipe, blower, and compressor sizing are based on the flowrates, vacuums, and pressures detailed above. Piping runs are based on surface obstructions and ease of installation.

3.0 SYSTEM DESIGN

The following sections detail the design of the SVE and air sparge systems. The systems will be utilized to remove hydrocarbon impact from the soil and groundwater in the vicinity of MW-6, MW-9, and MW-10. Figure 5 presents the locations of the SVE and air sparge wells in relation to the groundwater impact at site.

Pressurized air will be injected into the saturated zone via seven air sparging wells. The air will volatilize hydrocarbons in the groundwater, transferring the hydrocarbons from the liquid phase to the vapor phase; additionally, the oxygen added to the subsurface will enhance natural biodegradation of the hydrocarbons. The air injection will be cycled, with injection and non-injection intervals of approximately 4 hours. The effects of cycling the air injection are twofold. The periods between injection allow for increased biodegradation in the soils and groundwater. Additionally, when pressurized air is injected into the subsurface, preferred flow paths are created; the periods of shutdown allow these flow paths to seal. Other flow paths are opened when injection is restarted; therefore, a more balanced remediation is achieved.

The SVE system will recover impacted vapors from the subsurface via 5 wells. Impacted soil vapors as well as impacted vapors from the volatilization of hydrocarbons via air sparging will be recovered. The vapors will be treated via carbon adsorption prior to discharge to the atmosphere.

This section contains a description of the components of the SVE and air sparging systems, including well design, the piping network, and the recovery and treatment equipment. Also included is a description of the system controls including an autodialer to alert IT personnel of a system shut down.

3.1 SVE System

The layout of the SVE system piping is presented in Figure 6, well head details are presented in Figure 7, and a process flow diagram is presented in Figure 8. The following sections detail the well design, piping network, and equipment.

3.1.1 Well Design

Four-inch diameter, 0.040-inch-slot polyvinyl chloride (PVC) well screen and 4-inch diameter PVC well casing will be used to construct the SVE wells. Each well will be installed in an 8.25-inch diameter boring to approximately 37 feet bgs. However, field adjustment to this depth may be required to ensure that the screened interval is located in the sand and gravel layer and above the water table. A five foot long section of screen will be installed at the base of the boring and the casing will be extended to above the ground surface. The annular space from the bottom of the boring to one foot above the screen will be filled with sand. A three foot thick bentonite seal will be placed immediately above the sand pack. The remainder of the boring will be filled with a cement/bentonite grout to grade.

At each well head, a 4-inch tee will be installed on the top of the riser. A 4-inch cap will be installed on the

tee to allow for installation of a vacuum indicator and to allow access to the well. At the other end of the tee, a 4-inch by 2-inch reducer will be installed. A butterfly valve will be placed downstream of the reducer to allow control of air flow and vacuum at the well. All above-ground pipe and fittings for the SVE system will be Schedule 80 PVC.

Well and well head details are presented in Figure 7.

3.1.2 Piping Network

Two, two-inch Schedule 80 PVC header pipes will be run above-ground from each wellhead toward the SVE skid-based unit which will be placed in the site building (Figure 5). The pipe from wells SVE-1, SVE-2, and SVE-3 will be manifolded as shown on Figure 5. At the point where SVE-1 is" teed" into the line, the pipe size will be increased to 3-inch diameter. The 2-inch Schedule 80 PVC pipe from SVE-4 and SVE-5 will also be manifolded as shown in Figure 5. All pipe will be supported on railroad ties, spaced approximately 20 feet apart inside the building and 10 feet apart outside the building (where sagging of the pipe due to changes in temperature will be more prevalent).

Therefore, two SVE header pipes will run to the SVE skid, located in the plant building.

3.1.3 SVE Equipment Skid

The two SVE header pipes will be manifolded at the SVE equipment skid. At the SVE skid, a valve for flow/vacuum control and a vacuum indicator will be installed on each line. An additional branch will be installed on the skid piping manifold to accommodate future system expansion. The manifold header will be 4-inch Schedule 80 PVC (or galvanized steel) piping. Downstream of the pipe manifold, a knockout tank with a mist eliminator will be installed to prevent water from entering the vapor phase carbon adsorbers. The vacuum blower will be installed downstream of the knockout tank and an airflow meter will be installed at the discharge side of the blower.

The vacuum blower shall be a Roots Series 59 (or equal) positive displacement blower which is capable of producing the required vacuum and flowrate as discussed in Section 2.0, with an allowance for additional flowrate based on future system expansion. The blower will be equipped with a 10 horsepower, 460 volt, 3 phase motor.

A level switch, located in the knockout tank, will shut down the SVE blower if the liquid level in the tank reaches a pre-set level. A mechanical vacuum relief valve will open if the vacuum in the line reaches a preset high level.

All electrical components on the skid, including a shut off switch for the SVE blower and a junction box for power and control wiring, shall be rated for use in a Class 1, Division 2 atmosphere.

3.2 Air Sparge System

The layout of the air sparge system piping is presented in Figure 6, well head details are presented in

Figure 7, and a process flow diagram is presented in Figure 8. The following sections detail the well design, piping network, and equipment.

3.2.1 Well Design

A 1.25-inch diameter stainless steel well point and galvanized steel pipe will be used to construct the air sparge wells. Each well will be installed in a 6.25-inch diameter borehole to depths of approximately 50 feet bgs. However, field adjustment to this depth may be required to ensure that the screened interval is located in the sand and gravel layer at a minimum of 10 feet below the water table. The 2-foot long screened well point will be installed at the bottom of the boring. The annular space from the bottom of the boring to one foot above the top of the well point will be filled with sand. A three foot thick bentonite seal will be placed immediately above the sand pack. The remainder of the boring will be filled with a cement/bentonite grout to grade.

At each well head, a 1.25-inch galvanized steel tee will be installed on the top of the riser. A 1.25-inch cap will be installed on the tee to allow for installation of a vacuum indicator and to allow access to the well. At the other end of the tee, a 1.25-inch butterfly valve will be installed to allow control of air flow and pressure at the well. Upstream of the butterfly valve, a 1.25-inch by 2-inch reducer, a galvanized steel flange, and a high density polyethylene (HDPE) flange will be installed to allow the transition to 2-inch HDPE pipe.

Well and well head details are presented in Figure 7.

3.2.2 Piping Network

Two-inch HDPE pipe will be run above-ground from each wellhead toward the air sparge skid. The pipe from wells AS-1 through AS-4 will be manifolded as shown on Figure 5. Similarly 2-inch the pipe from AS-5 through AS-7 will also be manifolded as shown in Figure 5. All pipe will be supported on railroad ties spaced approximately 20 feet apart inside the building and 10 feet apart outside the building (where sagging of the pipe due to changes in temperature will be more prevalent).

Therefore, two air sparge header pipes will run to the air sparge skid, located in the plant building.

The piping runs are presented in Figure 6.

3.2.3 Air Sparge Equipment Skid

The two air sparge header pipes will be manifolded at the air sparge equipment skid, which will be located in the plant building (Figure 5). A valve for flow/pressure control, a pressure indicator, and a flow indicator will be installed on each line. A solenoid valve will also be installed on each manifold line; the solenoid valves will work off timers to allow the cycling of air injection to each group of wells.

An additional branch will be installed on the skid piping manifold to accommodate future system

expansion. The manifold header will be 2-inch galvanized steel piping.

Air will be provided to the manifold via a GAST Model 1290 rotary vane air compressor. It shall be capable of producing the required pressure and flowrate as discussed in Section 2.0, with an allowance for additional flowrate based on future system expansion. The blower shall be equipped with a 15 horsepower, 460 volt, 3 phase motor. Downstream of the compressor, an air to air heat exchanger will cool the compressed air to allow warm (not hot) air to be injected into the subsurface.

A temperature switch downstream of the heat exchanger will shut down the compressor if the temperature of the air stream reaches approximately 160 degrees Fahrenheit. The compressor will also shut down if the SVE blower is shut down or if all solenoid valves are closed. A mechanical pressure relief valve will open if the pressure in the line reaches a preset high level.

All electrical components on the skid will be rated for a general environment. The main disconnect and control panel will be mounted on this skid.

3.3 Air Treatment

Activated carbon adsorbers will be utilized to remove hydrocarbons from the soil vapor extracted via the SVE system. Two vapor phase carbon adsorbers, each containing 1,000 pounds of granular activated carbon (GAC), will be utilized. Pressure indicators and sample ports will be located at the inlet and outlet of each adsorber.

3.4 Control Panel

One control panel will be utilized to operate both the SVE and air sparging systems. The panel will be mounted on the air sparge equipment skid and will contain the following:

- Hand/Off/Auto switches, run lights, and hour meters for the SVE blower, air compressor, and solenoid valves.
- Relays and/or software required for the following interlocks: Shut the air sparge compressor down for high temperature at the heat exchanger outlet, shut down of the SVE blower, or if all the solenoid valves are closed; shut down of the SVE blower for high liquid level in the knock-out tank.
- An autodialer to notify IT personnel of a system shut down.

4.0 SYSTEM PERMITTING

After acceptance of the design by BUSTR, an air permit exemption will be applied for through the Ohio Environmental Protection Agency (OEPA). Initial uncontrolled (prior to carbon treatment) volatile organic carbon (VOC) emissions will be greater than the de minimus exemption level of 10 pounds per day. Therefore, the exemption allowing for operation of a groundwater treatment system for six months with uncontrolled emissions above de minimus levels will be utilized. If, after three months of operation, it appears that the uncontrolled discharge will be less than 10 pounds per day after the six month period, an application for the de minimus exemption will then be submitted. If it appears that the uncontrolled discharge will remain above the de minimus levels, a Permit To Install (PTI) will be required. This permit typically requires approximately three months for processing.

5.0 SYSTEM START-UP AND OPERATION AND MAINTENANCE

The start-up and operation and maintenance (O&M) procedures developed for this system have been designed to allow collection of data necessary to ensure proper operation of the system and allow WPSC and BUSTR to track the progress of the remedial activities. This start-up and O&M plan has been divided into four time periods:

- Baseline Monitoring: prior to start-up of the remediation system;
- Start-up: the first two weeks of SVE system operation which includes the first week of air sparge system operation;
- Short-term monitoring: the month of operation following the start-up period;
- Long-term monitoring: the remainder of system operation.

Each period is discussed in the following sections.

5.1 Baseline Monitoring

Prior to activation of the SVE and air sparging systems, the following parameters will be monitored to establish baseline conditions:

- The groundwater elevation will be measured at each monitoring well;
- Groundwater samples will be collected from each groundwater monitoring well;
- The pressure will be measured at each groundwater monitoring well and the monitoring points installed to conduct the pilot study;
- The dissolved oxygen concentration will be measured in a grab sample collected from each groundwater monitoring well.

5.2 Start-Up Monitoring

The SVE system will be activated first. On the seventh day of operation, the air sparge system will be activated.

Soil Vapor Extraction System Start-Up

After the baseline parameters have been measured, the SVE system will be activated. The system will be monitored on the first, fourth, and seventh day of operation. The following conditions will be monitored:

- Pressure (vacuum) in each monitoring well (hourly during the first 8 hours of operation and on days 4 and 7);
- System air extraction rates (hourly during the first day of operation and on days 4 and 7);

- Volatile organic compound concentrations in the system off-gas (before and after carbon treatment) using a field photoionization detector (hourly during the first 8 hours of operation and on days 4 and 7);
- Groundwater elevation in each monitoring well (on days 4 and 7); and
- Dissolved oxygen concentrations in groundwater at each monitoring well (on day 7).

In addition, air samples will be collected from the influent and effluent sides of the air treatment system after one hour of operation and on day 7. These samples will be submitted to an environmental laboratory to be analyzed for BTEX and total petroleum hydrocarbons - gasoline range (TPH-GRO).

Air Sparge System Start-Up

On the seventh day of operation of the SVE system, the air sparge system will be activated. The system will be monitored during operation on that day and on the tenth and fourteenth day of operation. Days of operation are based on the initial start-up of the SVE system. The following conditions will be monitored:

- Pressure (vacuum) in each monitoring well (hourly during the first day of operation and on days 10 and 14);
- Soil vapor extraction and air injection rates (hourly during the first day of operation and on days 10 and 14);
- Volatile organic compound concentrations in the system off-gas (before and after carbon treatment) using a field photoionization detector (hourly during the first day of operation and on days 10 and 14);
- Groundwater elevation in each monitoring well (on days 10 and 14); and
- Dissolved oxygen concentrations in groundwater at each monitoring well (after one hour of operation and on day 14).

In addition, air samples will be collected from the influent and effluent sides of the air treatment system after one hour of operation and on day 14. These samples will be submitted to an environmental laboratory to be analyzed for BTEX and TPH-GRO.

5.3 Short-Term Monitoring

For the first month after completion of system start-up field activities, the system will be monitored on a weekly basis (once per week) for four weeks. During each weekly visit, the following parameters will be measured:

- Pressure (vacuum) in each monitoring well;
- Soil vapor extraction and air injection rates;
- Volatile organic compound concentrations in the system off-gas (before and after carbon treatment) using a field photoionization detector;

- Groundwater elevation in each monitoring well; and
- Dissolved oxygen concentrations in groundwater at each monitoring well.

Periodically, air samples will be collected from each of the following locations:

- SVE system air stream (before treatment);
- SVE system air stream between upstream and downstream GAC vessels;
- SVE system air stream after treatment by both GAC vessels.

These samples will be submitted to an environmental laboratory to be analyzed for BTEX and TPH-GRO. The results will be reviewed and used to:

- Ensure compliance with air discharge permit requirements;
- Evaluate system effectiveness; and
- Evaluate when breakthrough of the primary air treatment system may occur and to schedule carbon change-out of the primary air treatment system.

5.4 Long-Term Monitoring

After completion of the one month short-term monitoring program, a long-term monitoring program will be implemented. The program will consist of twice-per-month site visits to monitor the operation of the system. During each site visit, the following parameters will be measured:

- Pressure (vacuum) in each monitoring well;
- Soil vapor extraction and air injection rates;
- Volatile organic compound concentrations in the system off-gas (before and after carbon treatment) using a field photoionization detector;
- Groundwater elevation in each monitoring well; and
- Dissolved oxygen concentrations in groundwater at each monitoring well.

Quarterly sampling of the site monitoring wells will continue. The results will be reviewed basis to determine remediation system effectiveness.

Periodically, air samples will be collected from each of the following locations:

- SVE system air stream (before treatment);
- SVE system air stream between upstream and downstream GAC vessels;
- SVE system air stream after treatment by both GAC vessels.

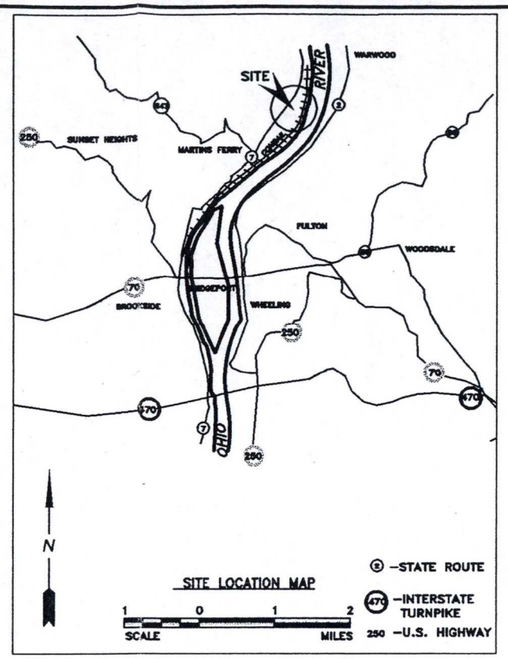
These samples will be submitted to an environmental laboratory to be analyzed for BTEX and TPH-GRO. The data will be reviewed and summarized on a monthly basis to:

- Ensure air discharge permit compliance;
- Evaluate system effectiveness; and
- Predict carbon break-through.

FIGURES

OFFICE Pittsburgh, PA | DRAWING NUMBER 784069-B3

MW13
MW14
MW15
MW11
WAREHOUSE
MW10
MW9
MW12
SMOKE STACK
RW1
MW6
MW1
MW3
MW4
MW2
MW5
DECOMMISSIONED GAS PUMP
RAILROAD TRACKS
WAREHOUSE



LEGEND:

- COLUMNS
- MONITORING WELL
- RECOVERY WELL

NOTE:
1. MONITORING WELL LOCATIONS TRANSFERRED FROM PREVIOUS INVESTIGATION SITE MAP WELL LOCATIONS NOT SURVEYED.

SOURCE:
WHEELING PITTSBURGH STEEL CORPORATION

SCALE 20 0 20 40 FEET

REFERENCE:
DRAWING REFERENCED FROM GROUNDWATER TECHNOLOGY, INC., NORWOOD, MA. MARCH 1995

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION WHEELING, WEST VIRGINIA

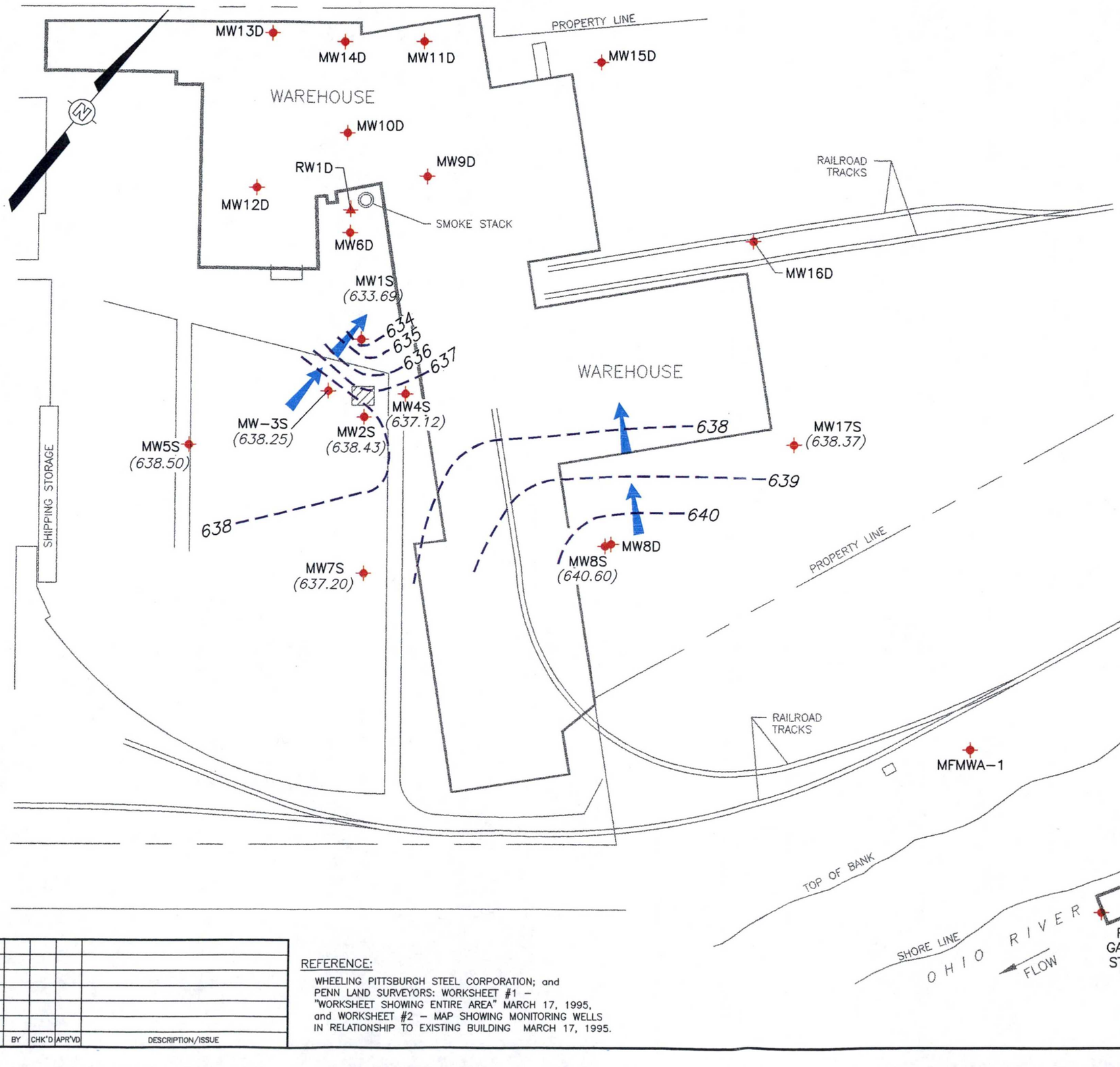
FIGURE 1
SITE PLAN
SVE/AIR SPARGE SYSTEM
MARTINS FERRY, OHIO

DESIGNED BY			CHECKED BY	GTD	04/07/00
DRAWN BY	--	--	APPROVED BY	HO	4-7-00

SCALE:	DRAWING NO.	SHEET NO.	REVISION NO.
AS SHOWN	784069-B3		

O:\Project\784069\Groundwater Tech\784069B3.dwg
Plot Date/Time: 04/06/00 02:24pm Image: .
Format Revised: 12/15/99 Xref: .

OFFICE Pittsburgh, PA | DRAWING NUMBER 784069-B4



LEGEND:

- MONITORING WELL
- RECOVERY WELL
- S SHALLOW WELL
- D DEEP WELL
- MFMWA MARTINS FERRY MUNICIPAL WATER AUTHORITY
- (638.37) GROUNDWATER ELEVATION (IN FEET)
- INFERRED GROUNDWATER ELEVATION CONTOUR (IN FEET)
- INFERRED GROUNDWATER FLOW DIRECTION (IN FEET)
- CONTOUR INTERVAL – 1 FOOT
- APPROXIMATE LOCATION OF FORMER UNDERGROUND STORAGE TANK

SCALE
0 100 200 FEET

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

REFERENCE:

WHEELING PITTSBURGH STEEL CORPORATION; and PENN LAND SURVEYORS: WORKSHEET #1 – "WORKSHEET SHOWING ENTIRE AREA" MARCH 17, 1995, and WORKSHEET #2 – MAP SHOWING MONITORING WELLS IN RELATIONSHIP TO EXISTING BUILDING MARCH 17, 1995.

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION WHEELING, WEST VIRGINIA

FIGURE 2
GROUNDWATER ELEVATION CONTOURS
SHALLOW WATER BEARING ZONE
12/10/99
MARTINS FERRY, OHIO

DESIGNED BY			CHECKED BY	CJP	04/07/00
DRAWN BY	---	---	APPROVED BY	HD	4-7-00
SCALE: AS SHOWN	DRAWING NO. 784069-B4		SHEET NO.		REVISION NO.

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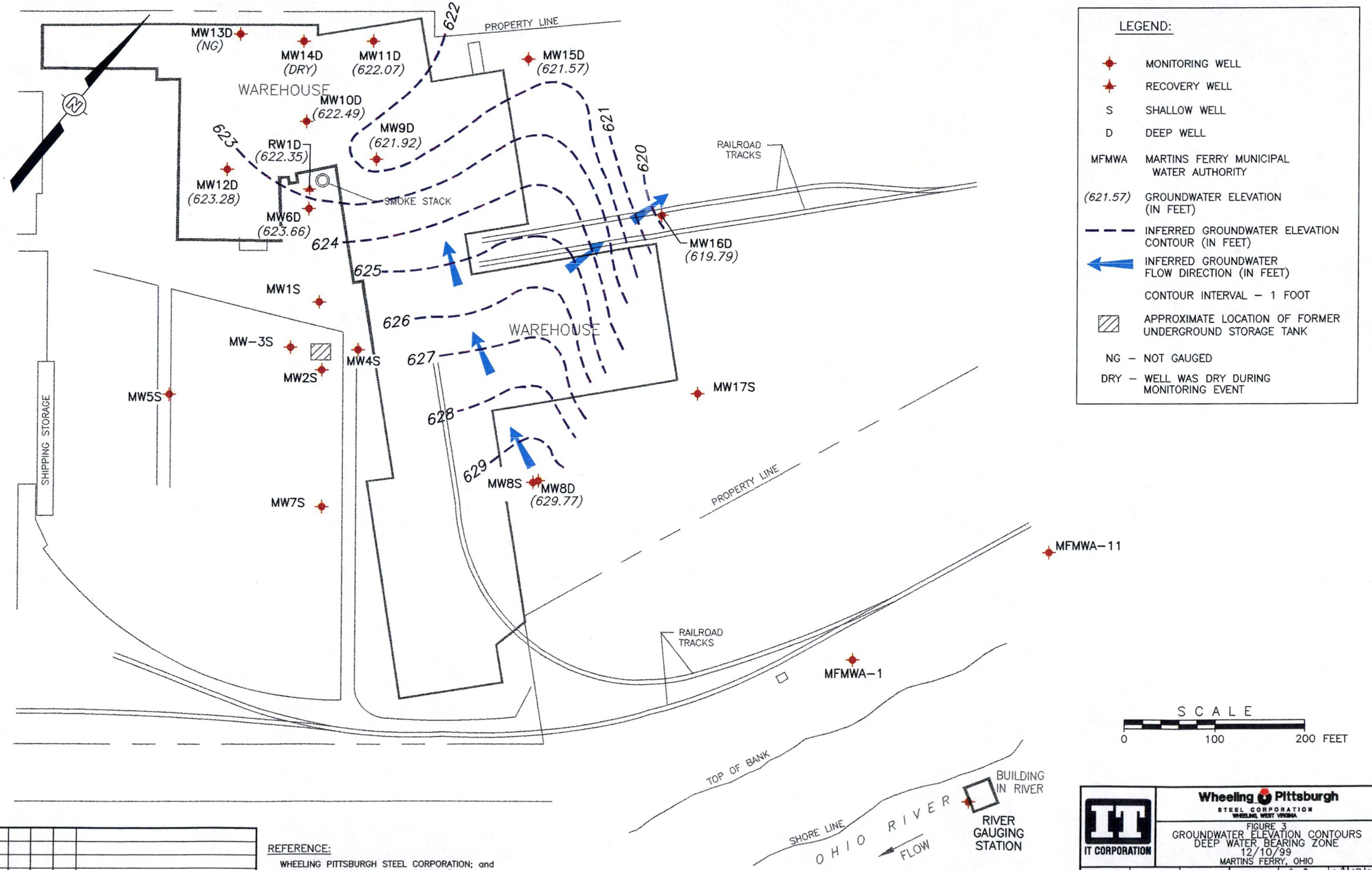
Plot Date/Time: 04/07/00 08:39am Image: SCAN-2
Format Revised: 12/15/99 Xref: .



LEGEND:

- MONITORING WELL
- RECOVERY WELL
- S — SHALLOW WELL
- D — DEEP WELL
- MFMWA — MARTINS FERRY MUNICIPAL WATER AUTHORITY
- (621.57) — GROUNDWATER ELEVATION (IN FEET)
- INFERRED GROUNDWATER ELEVATION CONTOUR (IN FEET)
- INFERRED GROUNDWATER FLOW DIRECTION (IN FEET)
- CONTOUR INTERVAL – 1 FOOT
- APPROXIMATE LOCATION OF FORMER UNDERGROUND STORAGE TANK
- NG – NOT GAUGED
- DRY – WELL WAS DRY DURING MONITORING EVENT

REFERENCE:

WHEELING PITTSBURGH STEEL CORPORATION; and PENN LAND SURVEYORS: WORKSHEET #1 – "WORKSHEET SHOWING ENTIRE AREA" MARCH 17, 1995, and WORKSHEET #2 – MAP SHOWING MONITORING WELLS IN RELATIONSHIP TO EXISTING BUILDING MARCH 17, 1995.

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION WHEELING, WEST VIRGINIA

FIGURE 3
GROUNDWATER ELEVATION CONTOURS
DEEP WATER BEARING ZONE
12/10/99
MARTINS FERRY, OHIO

DESIGNED BY			CHECKED BY	CJP	04/07/00
DRAWN BY	---	---	APPROVED BY	HD	4-7-00
SCALE: AS SHOWN	DRAWING NO. 784069-B5		SHEET NO.		REVISION NO.

OFFICE	DRAWN BY	784069-B5
Pittsburgh, PA	R.A.M. 1/11/00	DRAWING NUMBER
CHECKED BY	APPROVED BY	

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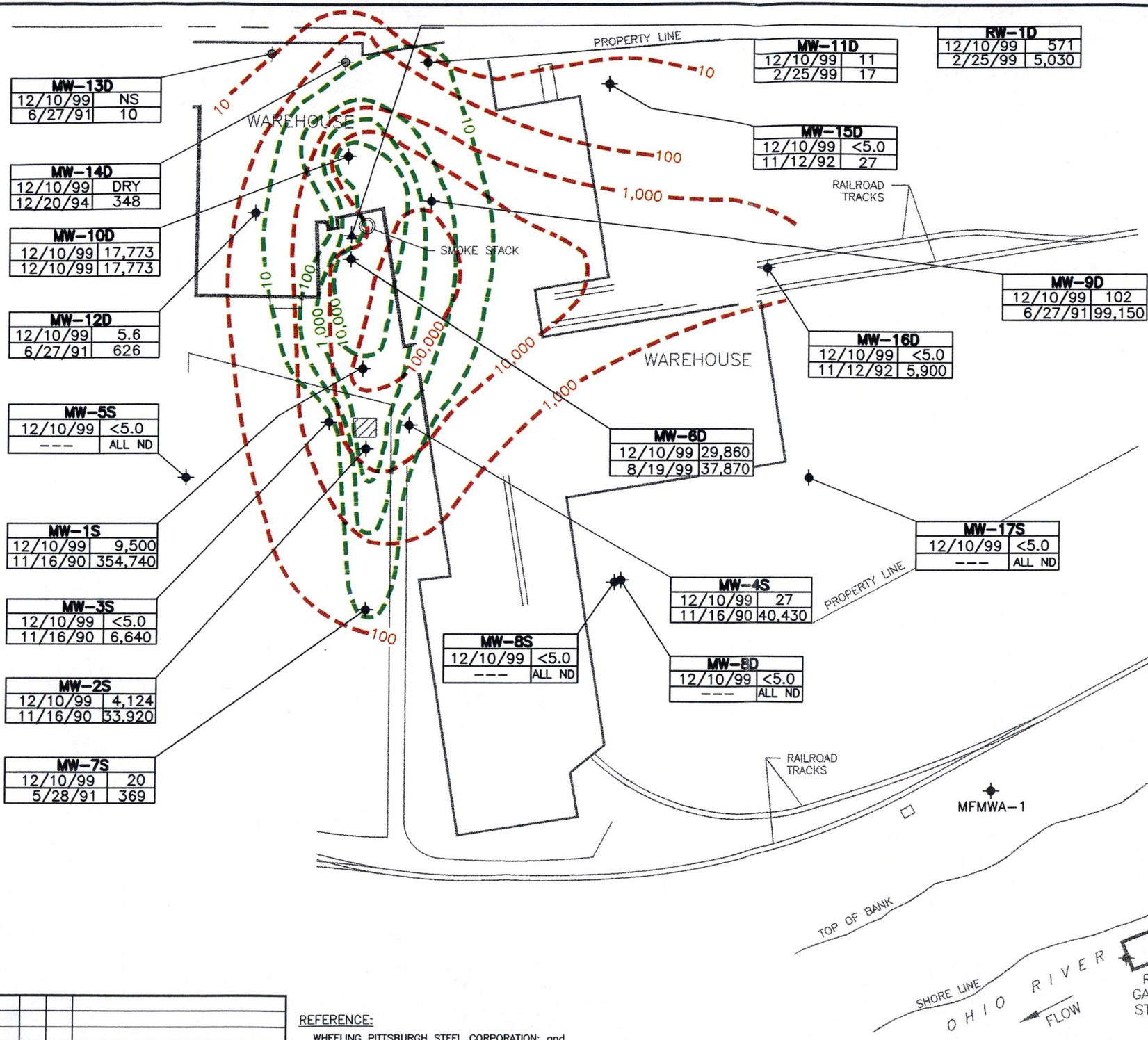
Format Revised: 12/15/99 Xref: .



LEGEND:

- MONITORING WELL
- RECOVERY WELL
- WELL NOT USED IN ISOCONCENTRATION PLOT
- S SHALLOW WELL
- D DEEP WELL
- MFMWA MARTINS FERRY MUNICIPAL WATER AUTHORITY
- NS = NOT SAMPLED

WELL ID	
SAMPLE DATE	TOTAL BTEX CONCENTRATION (ug/L)
SAMPLE DATE	HIGHEST HISTORICAL TOTAL BTEX CONCENTRATION (ug/L)

- ND = NOT DETECTED
- BTEX = BENZENE, TOULENE, ETHYLBENZENE & XYLENES
- TOTAL BTEX ISOCONCENTRATION 12/10/99
- TOTAL BTEX ISOCONCENTRATION– HIGHEST HISTORICAL CONCENTRATION (ug/L)

SCALE
0 100 200 FEET

REFERENCE:

WHEELING PITTSBURGH STEEL CORPORATION; and PENN LAND SURVEYORS: WORKSHEET #1 – "WORKSHEET SHOWING ENTIRE AREA" MARCH 17, 1995, and WORKSHEET #2 – MAP SHOWING MONITORING WELLS IN RELATIONSHIP TO EXISTING BUILDING MARCH 17, 1995.

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION WHEELING, WEST VIRGINIA

FIGURE 4
TOTAL BTEX DISTRIBUTION AND ISOCONCENTRATION CONTOURS CURRENT (Q4–99) VS HISTORICAL HIGH MARTINS FERRY, OHIO

DESIGNED BY			CHECKED BY	CJP	04078D
DRAWN BY	--	--	APPROVED BY	HP	4-7-00
SCALE: AS SHOWN	DRAWING NO. 784069-B6		SHEET NO.		REVISION NO.

DRAWING NUMBER	784069-B6
APPROVED BY	
CHECKED BY	
DRAWN BY	R.A.M. 6/28/99
OFFICE	Pittsburgh, PA
X-REF	---
IMAGE	---

PLOT DATE: 1/12/00
FORMAT REVISION 3/25/99

OFFICE Pittsburgh, PA | DRAWING NUMBER 784069-B8

LEGEND:

- MONITORING WELL
- RECOVERY WELL
- S SHALLOW WELL
- D DEEP WELL
- MFMWA MARTINS FERRY MUNICIPAL WATER AUTHORITY
- TOTAL BTEX ISOCONCENTRATION – 12/10/99 (ug/L)
- APPROXIMATE LOCATION OF FORMER UNDERGROUND STORAGE TANK

SCALE
0 100 200 FEET

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

REFERENCE:

WHEELING PITTSBURGH STEEL CORPORATION; and PENN LAND SURVEYORS: WORKSHEET #1 – "WORKSHEET SHOWING ENTIRE AREA" MARCH 17, 1995, and WORKSHEET #2 – MAP SHOWING MONITORING WELLS IN RELATIONSHIP TO EXISTING BUILDING MARCH 17, 1995.

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION WHEELING, WEST VIRGINIA

FIGURE 5
WELL LOCATIONS WITH ISOCONCENTRATION CONTOURS
MARTINS FERRY, OHIO

DESIGNED BY			CHECKED BY	CJD	04/07/00
DRAWN BY	--	--	APPROVED BY	RJO	4-7-00
SCALE: AS SHOWN	DRAWING NO. 784069-B8		SHEET NO.		REVISION NO.

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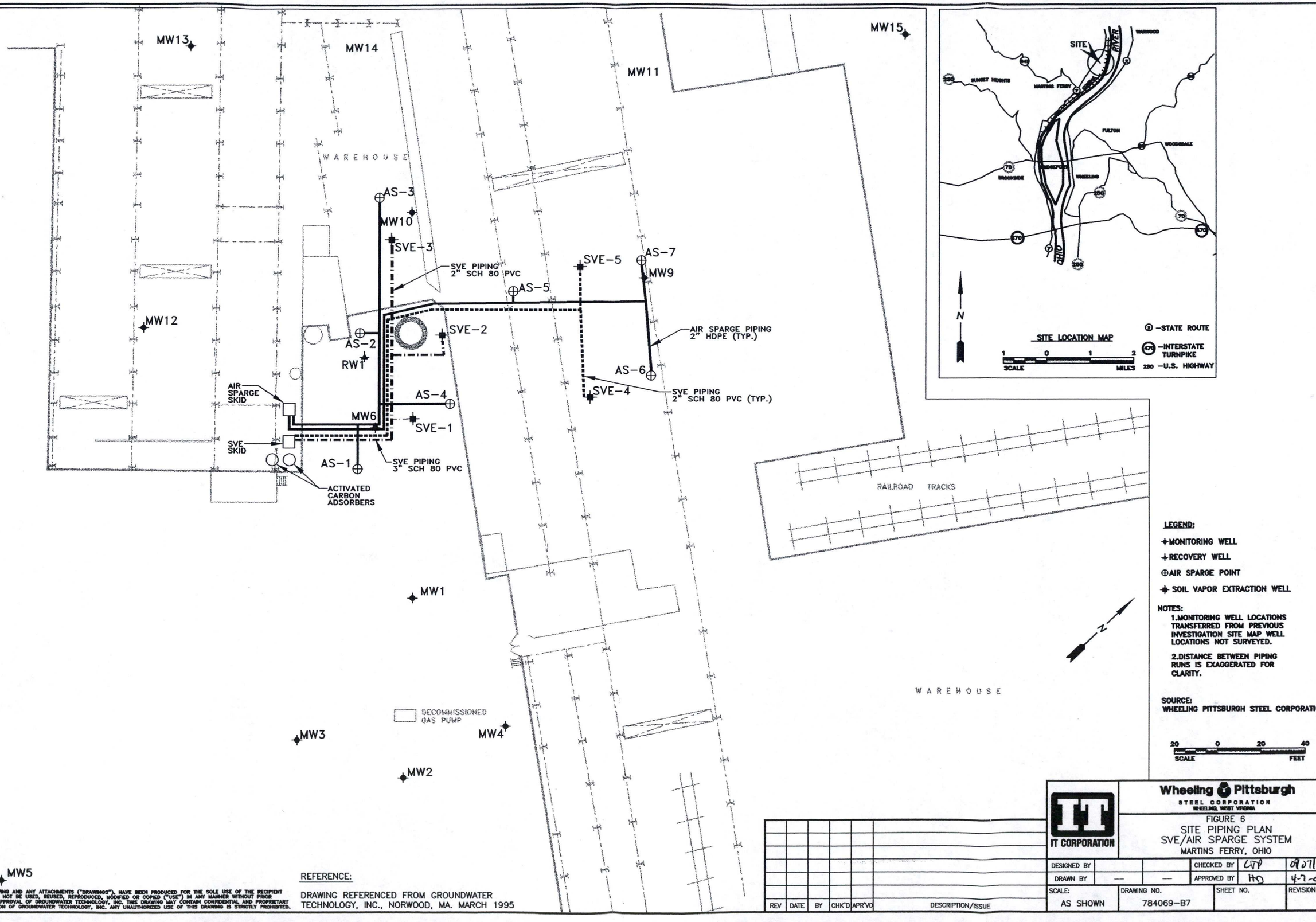
Format Revised: 12/15/99 Xref: .

OFFICE: Pittsburgh, PA | DRAWING NUMBER: 784069-B7



LEGEND:

- MONITORING WELL
- RECOVERY WELL
- AIR SPARGE POINT
- SOIL VAPOR EXTRACTION WELL

NOTES:

1. MONITORING WELL LOCATIONS TRANSFERRED FROM PREVIOUS INVESTIGATION SITE MAP WELL LOCATIONS NOT SURVEYED.
2. DISTANCE BETWEEN PIPING RUNS IS EXAGGERATED FOR CLARITY.

SOURCE:
WHEELING PITTSBURGH STEEL CORPORATION

SCALE 20 0 20 40 FEET

REFERENCE:

DRAWING REFERENCED FROM GROUNDWATER TECHNOLOGY, INC., NORWOOD, MA. MARCH 1995

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION WHEELING, WEST VIRGINIA

FIGURE 6
SITE PIPING PLAN
SVE/AIR SPARGE SYSTEM
MARTINS FERRY, OHIO

DESIGNED BY			CHECKED BY	CTP	04/27/00
DRAWN BY	---	---	APPROVED BY	PMO	4-27-00
SCALE: AS SHOWN	DRAWING NO. 784069-B7		SHEET NO.		REVISION NO.

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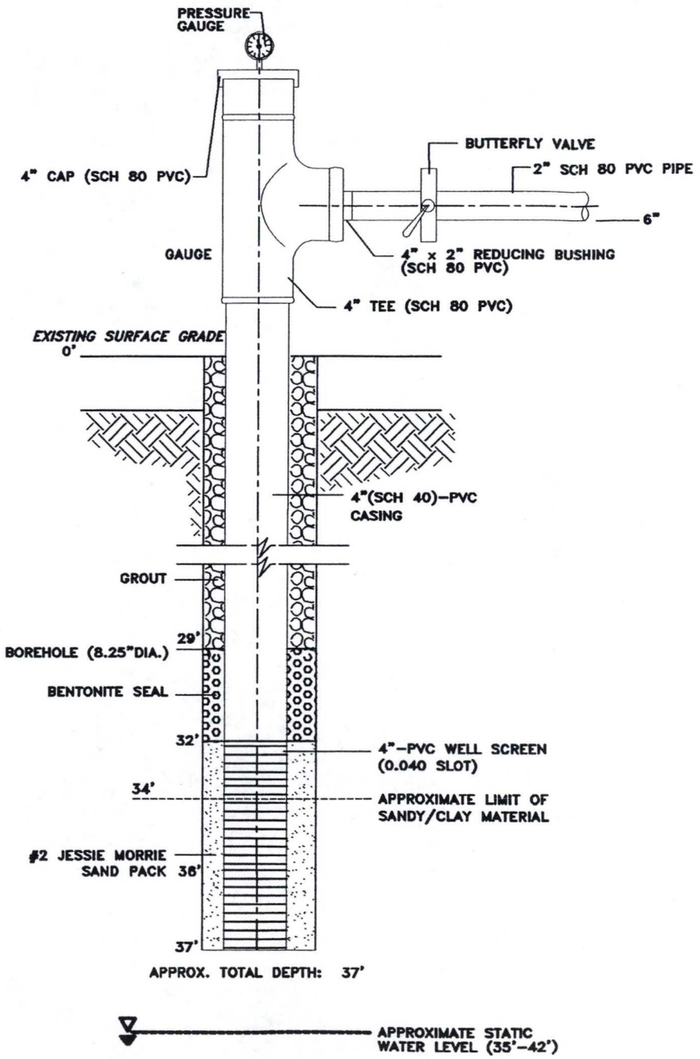
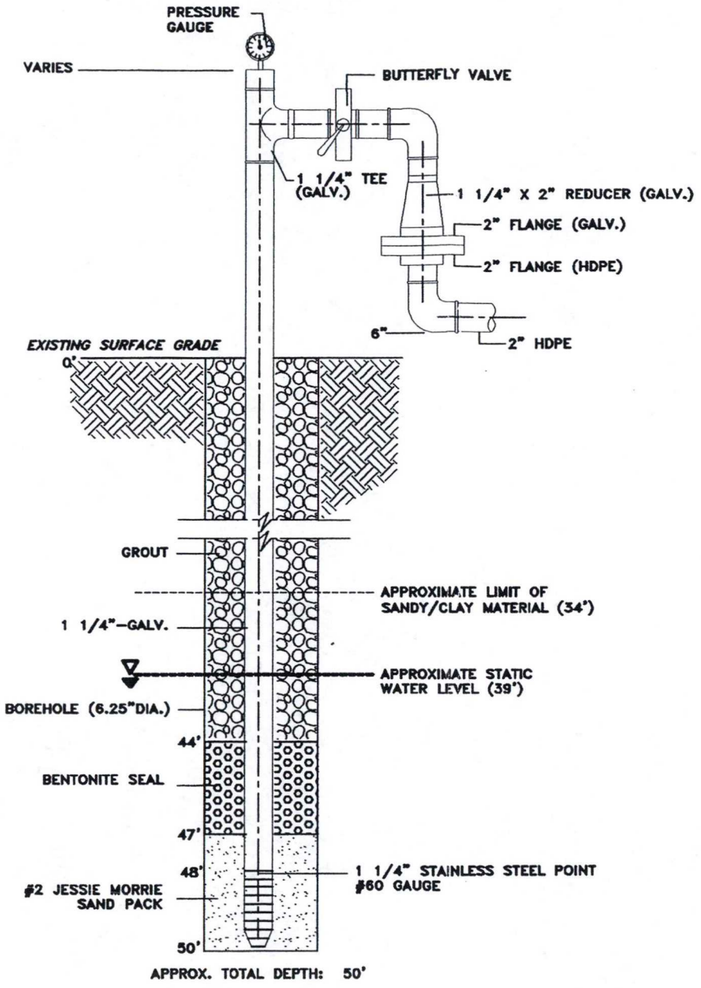
Format Revised: 12/15/99 Xref: .

OFFICE: Pittsburgh, PA
DRAWING NUMBER: 784069-B1



PROPOSED SOIL VAPOR EXTRACTION WELL
(TYP. OF 5)



PROPOSED AIR SPARGE POINT
(TYP. OF 7)

SCALE: NOT TO SCALE

REFERENCE:

ORIGINAL DRAWING REFERENCED FROM
GROUNDWATER TECHNOLOGY, NORWOOD, MA. MARCH 1995

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION WHEELING, WEST VIRGINIA

FIGURE 7
SOIL VAPOR EXTRACTION AND AIR SPARGE WELL DETAILS
SVE/AIR SPARGE SYSTEM
MARTINS FERRY, OHIO

DESIGNED BY			CHECKED BY	GJP	04/07/00
DRAWN BY	—	—	APPROVED BY	HD	4-7-00
SCALE: NONE	DRAWING NO. 784069-B1		SHEET NO.		REVISION NO.

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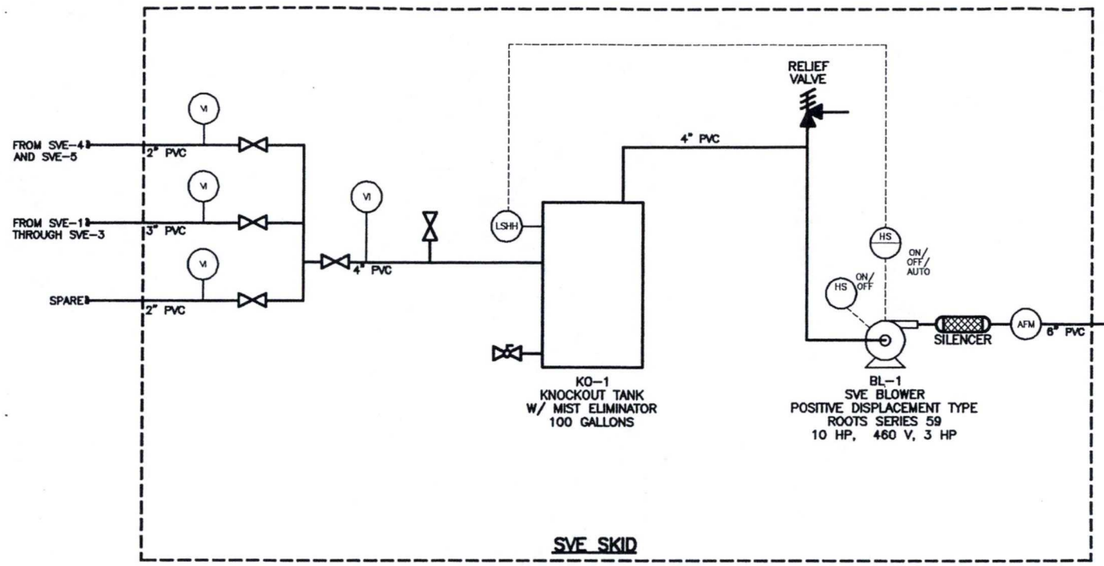
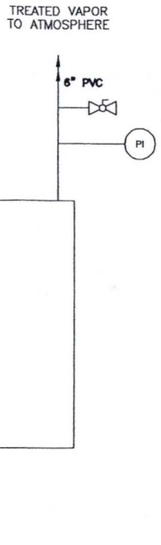
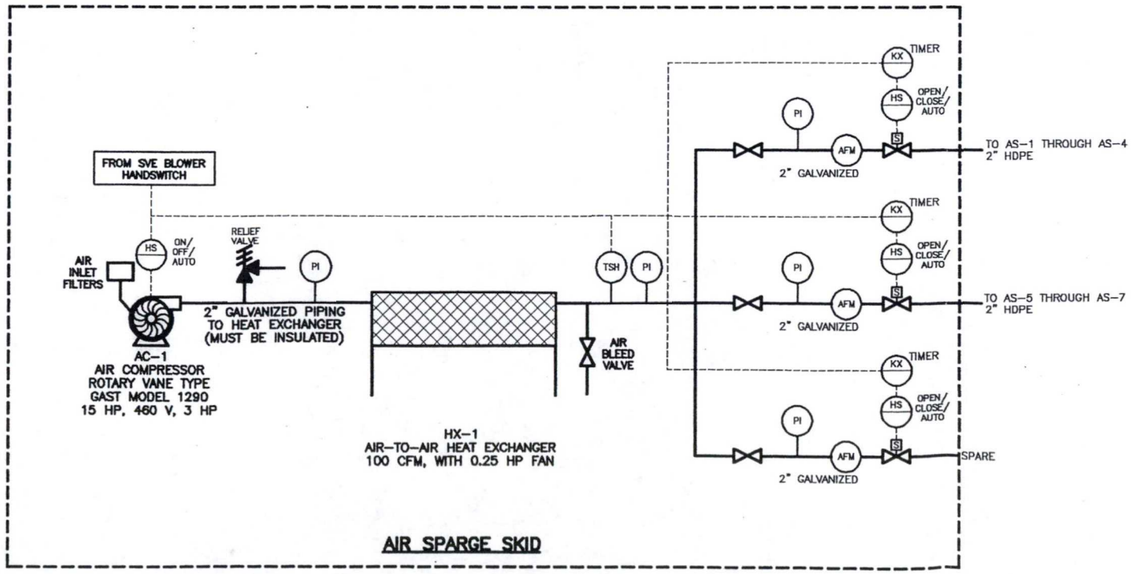
Plot Date/Time: 04/06/00 04:39pm Image: .
Format Revised: 12/15/99 Xref: .

OFFICE: Pittsburgh, PA
DRAWING NUMBER: 784069-B2







NOTES:

1. SVE BLOWER SHUTS DOWN ON:
   - HIGH HIGH LIQUID LEVEL IN KNOCKOUT TANK
2. AIR COMPRESSOR SHUTS DOWN ON:
   - HIGH TEMPERATURE AT HEAT EXCHANGER DISCHARGE
   - SHUT DOWN OF THE SVE BLOWER
   - NO SOLENOID VALVES OPEN

LEGEND:

	GATE VALVE
	BALL VALVE
S	SOLENOID VALVE
	PANEL-MOUNTED INSTRUMENT
	LOCAL-MOUNTED INSTRUMENT
AFM	AIR FLOW METER
DPI	DIFFERENTIAL PRESSURE INDICATOR
HS	HAND SWITCH (ON CONTROL PANEL)
VI	VACUUM INDICATOR
VSL	VACUUM SWITCH (LOW)
VSH	VACUUM SWITCH (HIGH)
LSHH	LEVEL SWITCH (HIGH HIGH)
KX	ADJUSTABLE TIMER (ON CONTROL PANEL)
PI	PRESSURE INDICATOR
TSH	TEMPERATURE SWITCH (HIGH)
TI	TEMPERATURE INDICATOR

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

IT CORPORATION

Wheeling Pittsburgh STEEL CORPORATION, WHEELING, WEST VIRGINIA

FIGURE 8
SVE AND AIR SPARGING SYSTEM
PROCESS FLOW DIAGRAM
MARTINS FERRY, OHIO

DESIGNED BY	C. PIKE		CHECKED BY	CJP	04/07/00
DRAWN BY	STRITMATTER	--	APPROVED BY	HD	4-7-00
SCALE: NONE	DRAWING NO. 784069-B2		SHEET NO.		REVISION NO.

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Plot Date/Time: 04/07/00 08:37am
Format Revised: 12/15/99
Image: .
Xref: .

2.45.1.1
1998

To: ECMF / Martins Ferry UST March 4, 1998

From: Bud Smith

cc: Bill Samples, Pat Smith

Re: Telephone conversation with Lynne Caughell (Ohio BUSTR)

Lynne Caughell called to inform us she had received our report, "Baseline Natural Attenuation Monitoring Report" and cover letter in which we proposed to modify the Remedial Action Plan (RAP) from air sparging to natural bioremediation. She was impressed by our report and thought we "had gone beyond the call of duty". She especially liked Table 2 which showed the level of concentrations over the years for each individual constituent. She had the following comments on our proposed modification to the RAP.

1. She thought the best approach to modify the RAP would be to propose a "monitoring only remedial program" as provided for in OAC 13745-1301:7-9-13(J)(4). She pointed out some requirements for this option which we may not presently meet. These were:

   All wells must be monitored (Wells 5S, 17S, and 8S were not)

   No free product can exist in any monitoring well

   Any soil contamination can not exceed twice the sum of the BTEX site specific action levels

   No constituent concentration in any well can exceed the sum of the BTEX site specific action levels

   She reviewed our data and said she thought we may not meet all these criteria at this time.

2. She said we could continue to monitor quarterly in our "pilot study" and submit the data in our routine quarterly report, but this approach would not be considered a modified RAP at this time since it does not meet the criteria. If quarterly monitoring shows we meet the criteria, we can then formally request modification of the RAP. We do not have to implement the existing RAP at this time. However, if she receives citizen's complaints or complaints from Martins Ferry water department, she may have to require us to implement the RAP or make other kinds of modifications, such as, remediation of "hot spots".

3. She said we could at any time try to remediate the hot spots without BUSTR approval, but that we would probably not be reimbursed for such voluntary action that was not approved by her office. She said some firms apply Oxygen Releasing Compounds to accelerate remediation.

4. We need to monitor all of the wells during our pilot study.

5. She agreed with our request to change from monthly to quarterly monitoring for the routine sampling for free product. She said we did not have to monitor monthly during low ground water levels in July, August, and September as we had proposed.

6. She asked for a copy of our soil contamination data, since she could not locate her copy. She would like a drawing and tables showing the data in similar fashion to how we showed the data in our recent report.

I told her we would be in touch with her after each quarterly monitoring event to discuss the data with her and what our approach would be regarding modifying the RAP. She said she would make a note to file of our conversation, but would not issue a formal letter to us.

Bud Smith

Z.4.5.1.1

Wheeling Pittsburgh
STEEL CORPORATION

BUD E. SMITH
Manager
ENVIRONMENTAL CONTROL
(304) 234-2662

February 23, 1998

Ms. Lynne Caughell
Ohio Department of Commerce
Division of State Fire Marshall
Bureau of Underground Storage Tank Regulations
8895 East Main Street
Reynoldsburg, OH 43068-0678

Re: Martins Ferry UST - Remedial Action Plan July, 1995

Dear Ms. Caughell:

This letter comprises our formal request to modify the method of remediation for the UST site at our Martins Ferry Plant as contained in the above referenced document. We have recently completed a voluntary study of the ground water conditions at the UST site to evaluate the applicability of the existing Remedial Action Plan. The scope and results of this study are contained within the enclosed report, "Baseline Natural Attenuation Monitoring Report" (February 1998).

The study involved the collection of ground water quality data on BTEX/GRO (Benzene, Toluene, Ethylbenzene, Xylene/Gasoline Range Organics), TPH (Total Petroleum Hydrocarbons) and bioremediation parameters from selected monitoring wells. The objective of this study was to determine the present status of the ground water quality and to assess the potential for natural attenuation to remediate the contaminated ground water. The results indicate that significant bioremediation has occurred over the past several years, and that the parameters necessary for continued bioremediation are present in sufficient quantities to sustain the process. Therefore, we believe the method of remediation (soil vapor extraction) in the previously submitted Remedial Action Plan is no longer necessary.

In addition to the quarterly monitoring of required constituents, we are initiating a voluntary monitoring program to obtain ground water quality data on parameters necessary for natural bioremediation. This additional monitoring will also be performed on a quarterly frequency. The results of the analyses for both required and voluntary monitoring will be provided to you in the same quarterly report. The details of the voluntary program are contained in the "Recommendations" section of the enclosed report.

If you have any questions or comments on this modified Remedial Action Plan, please contact me at (304) 234-2662.

Sincerely,

Bud E. Smith

Bud E. Smith

Enclosure

cc: WRS/ECMF
P.J. Smith (w/o encl.)

Petroleum Underground Storage Tank Release Compensation Board

P.O. Box 163188 • Columbus, Ohio 43216-3188
Phone: (614) 752-8963 • Fax: (614) 752-8397

March 12, 1998

KORS
BES
ECMF

Attn: Mr. Frank Rozzi
Wheeling Pittsburgh Steel Corporation
1134 Market Street
Wheeling, West Virginia 26003

CLAIM NUMBER: 11587-001/09/24/90
SFMI NUMBER & DATE:
0702394-01/09/27/90 "East building"
RELEASE SITE ADDRESS:
Wheeling Pittsburgh Steel
1001 Main Street
Martins Ferry, Ohio 43935
RAP SUBMISSION DATE: July 20, 1995

Dear Mr. Rozzi:

The BUSTR site coordinator, Ms. Lynn Caughell, has recently informed me that they have received correspondence that the current (1995) Remedial Action Plan (RAP) is no longer appropriate and is withdrawn for pre-approval. In addition, a new plan has been verbally agreed by BUSTR to proceed with one year of groundwater sampling as a part of continued site assessment, or what BUSTR has termed a "*pilot study.*" This site data will then be evaluated for the appropriateness of revising the RAP to a "monitoring only" plan.

When the year of groundwater sampling and data evaluation is complete and a newly revised RAP is proposed, please provide a copy of the new plan along with detailed cost estimates for our cost pre-approval.

Besides our requirement for pre-approving estimated RAP implementation costs, estimated costs for all other program tasks can be pre-approved by us on a voluntary basis. If you want the estimated costs for the proposed year of groundwater sampling be reviewed, or if you have any other questions, please contact me at 614-752-8963. When responding in writing, please address the correspondence to my attention, indicating the full claim number.

Sincerely,

Michael H. Grube

Michael H. Grube
Environmental Claims Analyst

Copies to: ~~W.R. Samples~~
T. J. Waligura - 3/16/98

RECEIVED
MAR 16 1998
Corporate Risk Management